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REGULATORY UNCERTAINTY AND COAL-FIRED POWER PLANT DEVELOPMENT

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ABSTRACT

In a 5-year period only 12% of the projected coal-fired power plant capacity was actually installed. Among the explanations cited for the decline was the absence of a regulatory structure related to greenhouse gases and climate change. Executive resistance to regulating one of those greenhouse gases, carbon dioxide, and judicial insistence that the executive make a clear determination as to why it would or would not use its authority to issue those regulations created a climate of uncertainty affecting at least one segment of the nation's energy sector.

The concept of regulatory certainty is frequently presented as a positive means to promote business and industrial development because a clear pattern of regulations provides the consistency upon which organizations can base future operations. Its opposite, regulatory uncertainty can paralyze the planning process because there is no way to predict the outcome of project necessities, such as permit applications concerning air quality, water use, construction, and land use. Regulatory uncertainty can stem from confusing or conflicting regulations or the absence of regulations.

The damaging impact of the absence of a national regulatory structure—or the uncertainty caused by the possibility of future regulation—on future planning and development may seem counterintuitive, especially in a generally antiregulatory business climate. Regulations are often perceived as being, and sometimes are, too restrictive and as having the effect of inhibiting rather than promoting growth.

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However, it turns out that the absence of regulation also has the potential to stymie growth, as witnessed in the declining construction of coal-fired power plants resulting from the lack of carbon dioxide regulation.

It is not the intent of this article to determine whether the cited coal-fired plants should have been built or whether the reasoning of the regulators and the judiciary as described below is valid. Rather, the objective is both to assess the outcomes associated with the regulatory uncertainty associated with the absence of a regulatory framework for carbon dioxide emissions and to suggest regulatory options.

STATUS OF NATIONAL CARBON DIOXIDE REGULATION

The history of national carbon dioxide regulation is quite short: the Administration stated its opposition to regulations; the Supreme Court ruled that a decision on the status of carbon dioxide pursuant to the Clean Air Act (CAA) of 1990 had to be made; and the Administration is reviewing its options.

The Administration's Position

In a March 2001 letter to several senators regarding the control of carbon dioxide, the President stated his support for a phased, multi-pollutant strategy that would force power plants to reduce the emissions of sulfur dioxide, nitrogen oxides, and mercury over a reasonable time period. The Administration stated its support for this phased approach because it would provide the industry with regulatory certainty. Carbon dioxide was not part of the multi-pollutant strategy because the administration did not consider it a pollutant under the CAA [1].

The U.S. Environmental Protection Agency (EPA) maintained the Administration's interpretation in 2005 when the state of Massachusetts, joined by 11 states, 3 cities, an American territory, and several environmental organizations, sued it for failure to enforce its CAA responsibilities to regulate the emission of carbon dioxide and other greenhouse gases from new motor vehicles. The petitioners had sought judicial review of an EPA order in which it refused to issue such regulation. The U.S. Court of Appeals, District of Columbia Circuit, dismissed the review request. The court found that even if EPA had the statutory authority to regulate greenhouse gases, it had properly declined to exercise its authority by citing the scientific uncertainty about the causal effects of greenhouse gases on climate change. The court also accepted EPA's policy reasons for not exercising its regulatory authority: that carbon dioxide regulation would lead to an inefficient and piecemeal approach to climate change and that unilateral regulation of carbon dioxide would weaken attempts to encourage developing countries to reduce their greenhouse gas generation [2].

The Judiciary's Position

The Supreme Court heard oral arguments in the case in 2006. The EPA continued to maintain that carbon dioxide is not an air pollutant under section 302(g) of the CAA, and therefore EPA had no authority to regulate it. The CAA defines an air pollutant as

> any air pollution agent or combination of such agents, including any physical, chemical, biological, radioactive (including source material, special nuclear material, and byproduct material) substance or matter which is emitted into or otherwise enters the ambient air. Such term includes any precursors to the formation of any air pollutant, to the extent the Administrator has identified such precursor or precursors for the particular purpose for which the term "air pollutant" is used [3].

The Agency further argued that, even if it had the authority to regulate carbon dioxide under the CAA, it would not issue regulations because doing so would conflict with other priorities of the Administration. The priorities it cited included the Administration's voluntary programs approach to combating global warming. The Agency also stated that its regulation of carbon dioxide would impair the President's ability to negotiate emissions reductions with developing countries.

The Supreme Court declared in its 2007 opinion that EPA did indeed have the authority to regulate carbon dioxide given the CAA's "capacious definition" of the term air pollutant. It further ruled that the only basis upon which the EPA could refuse to exercise that regulatory authority is if the Agency determines that sufficient information does not yet exist to make an endangerment finding regarding the contribution of greenhouse gases to climate change. Alternatively, the Agency would need to present a reasonable explanation for its decision not to use its regulatory authority. The Agency's concern that its regulation of carbon dioxide would interfere with the implementation of the Administration's priorities did not strike the Court as a reasonable basis for regulatory inactivity [4].

The Supreme Court decision did not specify a date by which the EPA must declare whether a carbon dioxide endangerment finding was appropriate. The petitioners subsequently filed a request that EPA issue, within 60 days, its decision to regulate or not regulate carbon dioxide and other greenhouse gases. The U.S. Court of Appeals, District of Columbia Circuit, denied the request without explanation on June 26, 2008 [5].

The Administration's Response

In its advanced notice of proposed rulemaking (ANPR), *Regulating Greenhouse Gas Emissions Under the Clean Air Act,* published on July 30, 2008, EPA declared that the Agency was seriously considering how to regulate greenhouse gases under the CAA pursuant to the Supreme Court decision in *Massachusetts v.*

EPA. The ANPR presents the EPA's assessment of the effects of regulating greenhouse gases under the CAA and its work to date on an endangerment finding [6].

The ANPR suggests that the CAA is not the proper vehicle to regulate carbon dioxide but does not appear to propose an alternative mechanism. This creates two levels of uncertainty concerning:

1. whether carbon dioxide will be regulated; and
2. if so, what the regulation will require.

In the last several years, the uncertainty regarding carbon dioxide regulation has had a marked influence on at least one sector of the nation: coal-fired power plants.

COAL-FIRED POWER PLANTS AND CARBON DIOXIDE

For the last several years, the actual plant capacity of coal-fired power plants has been substantially lower than the amount of new capacity that had been announced. On the basis of projected capacity announced in 2002, more than 36,000 megawatts (MW) were expected to be installed by 2007; approximately 4,500 MW, or 12% of the projected amount, were installed by that year. Among the reasons for the sharp difference between the announced versus actual MW capacity values are the permitting and construction delays and cancellations attributed to regulatory uncertainty related to greenhouse gases and climate change [7].

A brief review of recent coal-fired power plant construction delays and cancellations reveals three possible causes: public reaction, state action, and utilities' actions based on economic decisions. These causes (examples of which are outlined below) have appeared to flourish in the absence of a regulatory structure for carbon dioxide.

Public Reaction

TXU provides electricity to more than 2.1 million customers in Texas. Its plans to build 11 new coal-fired electrical power plants throughout the state were not well received by members of the public. The plants would have doubled the amount of TXU's carbon dioxide emissions.

Fearing public backlash and a series of lawsuits, the private equity firms interested in purchasing TXU brokered a deal through national environmental groups. The 2007 deal included canceling 8 of the 11 planned plants. The cancelled plants were expected to generate a total of 8,580 MW of power and 56 million tons of carbon dioxide on an annual basis.

State Action: Kansas

The secretary of the Kansas Department of Health and Environment (KDEH) used statutory authority to deny an air permit for the construction of two 700-MW, coal-fired plants. The health effects of carbon dioxide emissions were the basis for the denial.

Sunflower Electric Power, a rural electrical cooperative, planned to build the plants in the western part of the state of Kansas; one plant would provide electricity to Kansas and the other to eastern Colorado. The $3.6-billion projects were expected to generate about 11 million tons of carbon dioxide annually.

The Kansas Air Quality Act, section 65-3012, authorizes the KDEH secretary to take action to protect the health of persons or the environment upon receipt of information that the emission of air pollution presents a substantial endangerment. Section 65-3002 of the Act defines air pollution as the presence of

> one or more air contaminants in such quantities and duration as is, or tends significantly to be, injurious to human health or welfare, animal or plant life, or property, or would unreasonably interfere with the enjoyment of life or property, or would contribute to the formation of regional haze.

The same section of the law defines "air contaminant" as meaning "dust, fumes, smoke, other particulate matter, vapor, gas, odorous substances, or any combination thereof."

In making the decision to deny the air permit, the KDEH secretary relied heavily on the Supreme Court's ruling in *Massachusetts v. EPA*. The Court's acknowledgment of the significant information available nationally and internationally on the harmful effects of greenhouse gases and its finding that carbon dioxide fell within the broad CAA definition of air pollutant provided the secretary with the basis for determining that carbon dioxide emission constituted air pollution under the Kansas Air Quality Act [8].

In response to the October 2007 KDEH decision to deny the Sunflower Electric Power air permit application, the state legislature passed and the governor vetoed three bills supporting construction of the coal-fired powerplants. The first of the three bills was passed in early March 2008, and the last veto was issued in mid-May 2008. The legislative session ended without an attempt to override the governor's May veto.

State Action: Georgia

In *Friends of the Chattahoochee v. Couch* [9], a Fulton County judge reversed the ruling of an administrative law judge that upheld the decision of the State's Environmental Protection Division (EPD) to grant an air permit to construct and operate a 1,200-MW, coal-fired plant in Early County, Georgia. The $2-billion plant was projected to emit 9 million tons of carbon dioxide annually.

The county judge's ruling was based, in part, on the fact that the EPD of the Georgia Department of Natural Resources had not conducted a best available control technology (BACT) analysis pursuant to the CAA, even though the proposed plant was a major emitting facility in an attainment area. Because there was no BACT analysis, the EPD-issued permit did not contain emission limits for carbon dioxide.

Under the CAA, the permitting authority performs a case-by-case analysis of a proposed major emitting facility situated in an attainment area to determine the emission limitation for each pollutant subject to regulation by the Act. The emission limit is based on the maximum degree of reduction achievable, taking into account energy, environmental, and economic impacts and other costs.

The EPD's position was that a BACT analysis was not required because carbon dioxide is not a pollutant "subject to regulation" by the CAA. The county judge rejected that line of reasoning based on two lines of argument. First, the Supreme Court ruling in *Massachusetts v. EPA* clarifies that carbon dioxide is an air pollutant under the CAA. Second, carbon dioxide is already "subject to regulation" under the CAA through the monitoring requirement of section 75.13 of Part 40 of the Code of Federal Regulations (CFR). On the basis of the CAA's broad definition of BACT, the county judge also rejected EPD's argument that carbon dioxide would be considered "subject to regulation" for the purposes of a BACT analysis only if its emission is somehow limited or controlled [9].

Applications to appeal the county judge's decision have been filed with the Georgia State Court of Appeals.

Utility Action

In its June 2008 analysis of the status of new and proposed coal-fired power plants, the National Energy Technology Laboratory (NETL) reported that regulatory uncertainty regarding carbon dioxide and other greenhouse gases is a key issue that impacts both technology selection and the reliability of economic forecasts associated with developing those plants. In addition, the possible future need to address carbon dioxide mitigation complicates the capability of conventional coal-fired plants to predict returns on investments [7].

In its recent portfolio investment analysis, a large electrical generation and transmission company assumed an expected-case scenario of $14.00 per ton (in 2006 dollars) of carbon dioxide emissions beginning in 2012. The low and high case estimates were $0 and $50.00 per ton, respectively. The estimates were reasonably compatible with regional estimates that included a high case of $69.00 per ton and an expected case of $17.50 per ton by 2013 [10].

Given the range of estimates for the possible future costs of carbon dioxide emissions, the company described a carbon-intensive portfolio as representing an inherent risk that was unacceptable.

EFFECTS OF REGULATORY UNCERTAINTY

The decisions of the secretary of the Kansas Department of Health and the Environment and the Georgia county judge embody the adage that states will act in the absence of federal action. In the case of Kansas, in the absence of a regulation stipulating the carbon dioxide concentrations that constitute substantial endangerment, the KDEH secretary had complete discretion to determine that any emission amount can be the basis for rejecting an air permit.

This discretion, embedded in state law, does not provide any certainty to those applicants seeking air permits whose proposed activity involves carbon dioxide emissions or to the citizens the law is designed to protect. Air permit applicants have no basis for knowing whether their proposed carbon dioxide emission levels will rise to the level of constituting substantial endangerment and result in permit denial. Citizens concerned with the health effects of carbon dioxide will also be unsure as to whether the Kansas Air Quality Act will be applied in such a way as to protect their interests.

The Georgia case does impose certainty—for the time being. On the basis of the county judge's ruling, carbon dioxide is a CAA pollutant, and the state has a duty to establish emission limits in air permits. The applicants seeking discretionary appeal of the ruling assert that it misrepresents the Supreme Court's ruling in *Massachusetts v. EPA,* ignores congressional intent, threatens the state's economic development, and precludes public involvement in what essentially became an instance of judicial rulemaking [11]. The certainty associated with the county judge's ruling may be fleeting.

The power company's assessment—that the great variability in the projected future costs of carbon dioxide emissions presents an inherently unacceptable fiscal risk—suggests another component of regulatory uncertainty: economic investments demand some level of financial predictability. While a regulation may not be highly palatable to the regulated community, it can at least provide some degree of future fiscal certainty.

A rule regulating carbon dioxide emissions would probably not eliminate the public's reaction to situations such as that posed by the plans of TXU. Public reaction might be muted, however, if an accepted regulation were in place.

FUTURE OF CARBON DIOXIDE REGULATION

The future of any regulation of carbon dioxide raises two interrelated questions: how will the regulation be enacted, and who will carry it out?

The EPA-issued ANPR suggests that the CAA should not be used as the basis for regulating carbon dioxide. The primary objection cited in the ANPR is that use of the CAA would sweep up so many structures never before regulated that the nation's economy would be affected while the challenge of addressing global climate change would remain [6].

If the CAA truly is not an appropriate vehicle, the options for carbon dioxide regulation include congressional passage of a law specific to carbon dioxide emissions that precludes any state standards, states' passage of their own emission standards, or a combination of federal and state action. Federal-only action offers business and industry the utmost certainty. The states, however, are sometimes more progressive than the federal government. They also have the advantage of being able to tailor their laws and regulations to address state-specific interests, although this state-by-state rulemaking flexibility may not provide the level playing field that multistate businesses and industries prefer.

If the CAA must be abandoned as the authority for carbon dioxide regulation, its National Ambient Air Quality Standards (NAAQS) program could be a model for how the federal and state governments could interact. Under the NAAQS program, the federal government sets standards that must be attained but allows states some leeway to determine how they will meet those standards. While this modified, state-specific approach does not provide a level playing field nationwide, it would provide some degree of regulatory certainty.

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